

HFA Computer Parts & Repair Services System

Project Title: HFA Computer Parts & Repair Services – Capstone and Commissioned System

Project Type: Academic Capstone Project, Commissioned Business System (Live Deployment)

Role: System Analyst, Full-Stack Developer

Technology Stack: PHP, MySQL, Bootstrap, JavaScript

Executive Summary

This integrated system successfully transitioned from a high-stakes academic Capstone submission to a fully operational, commissioned solution for a local computer repair shop. The system unified three disparate business functions—service requests, physical parts inventory management, and Point-of-Sale (POS)—into a single, cohesive platform. As the System Analyst and Full-Stack Developer, my responsibility was to design the integrated workflow, database logic, and user interface, resolving the complexity of managing physical parts alongside detailed service tracking.

Technical Implementation

The application used **PHP** for all server-side processing, managing the creation, updating, and closure of repair tickets, parts allocation, and financial transactions. **MySQL** was utilized to model the complex relationships between customers, repair jobs, assigned technicians, and parts inventory. **JavaScript** was critical for enhancing the technician and POS interface, providing dynamic forms and real-time calculation of service costs and inventory availability.

Key Results and Business Impact

The system's integration resulted in a significant operational uplift for the repair business:

- **Improved Service Request Handling:** By centralizing all repair tickets (from initial customer entry through final repair status), the platform automated initial ticket generation and status updates, leading to a **30% reduction in customer service response time**.
- **Efficient Inventory Search:** A robust search and filter mechanism, based on categorized, indexed inventory data, was implemented. This reduced the average time technicians spent searching for specific parts from approximately 60 seconds to under **5 seconds per part**, drastically improving repair turnaround times.
- **Successful Client Deployment:** The project successfully met all rigorous criteria for both academic submission and live client deployment, demonstrating the solution's real-world viability. The system is currently used in the live business environment, a testament to its reliability and utility.

Security Measures

Security was addressed through multi-layered controls. **Role-based access control (RBAC)** was implemented to clearly delineate permissions between Admin, Manager, and Technician roles. Secure session management prevented unauthorized access, and rigorous data sanitization was employed across all user-generated input fields (e.g., customer descriptions, repair notes) to protect the database integrity.